

(12) UK Patent Application (19) GB (11) 2 310 298 (13) A

(43) Date of A Publication 20.08.1997

(21) Application No 9603600.9

(22) Date of Filing 15.02.1996

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(51) INT CL⁶
G06F 9/445

(52) UK CL (Edition O)
G4A AFL

(56) Documents Cited
EP 0654936 A2 EP 0457940 A1 EP 0284924 A2
US 5406484 A US 5247446 A

(58) Field of Search
UK CL (Edition O) G4A AFL
INT CL⁶ G06F 9/24 9/445
Online: WPI

(54) Updating operating systems of remote computers by radio link

(57) When an operating system update is necessary a host computer 108 checks that the remote computers are ready for the update and then sends new configuration files to the remotes, via radio modem link, followed by an update command. The remote computers report to the host which uses database 109 to keep track of which remotes have been updated. Both the old and new operating systems are stored in the host's configuration files database 110. Remotes which are not successfully updated may be locked or prevented from communicating.

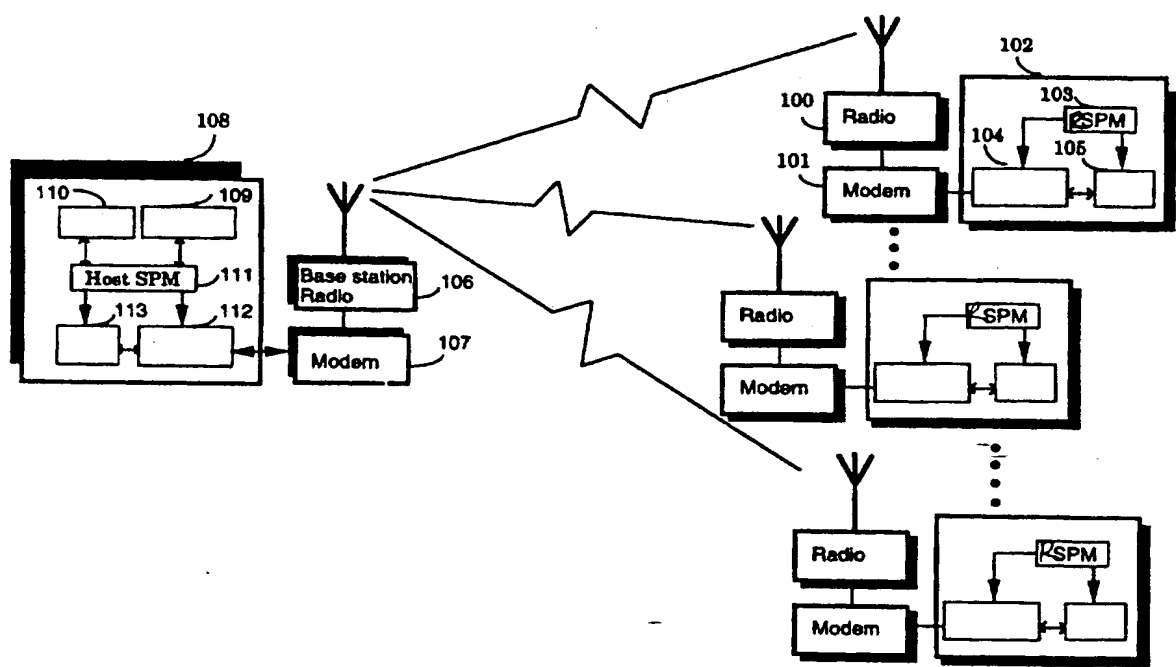


FIG. 1

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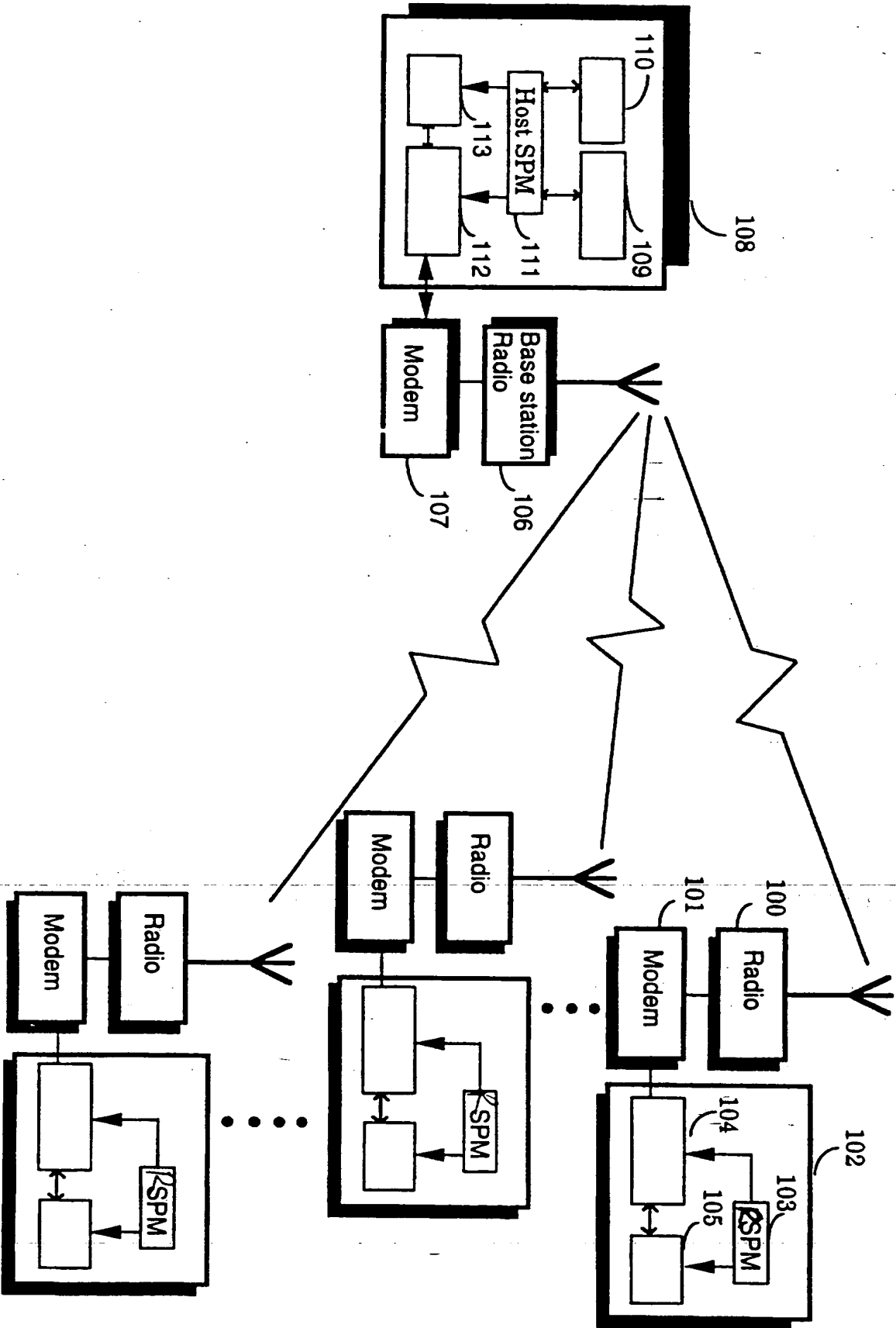


FIG. 1

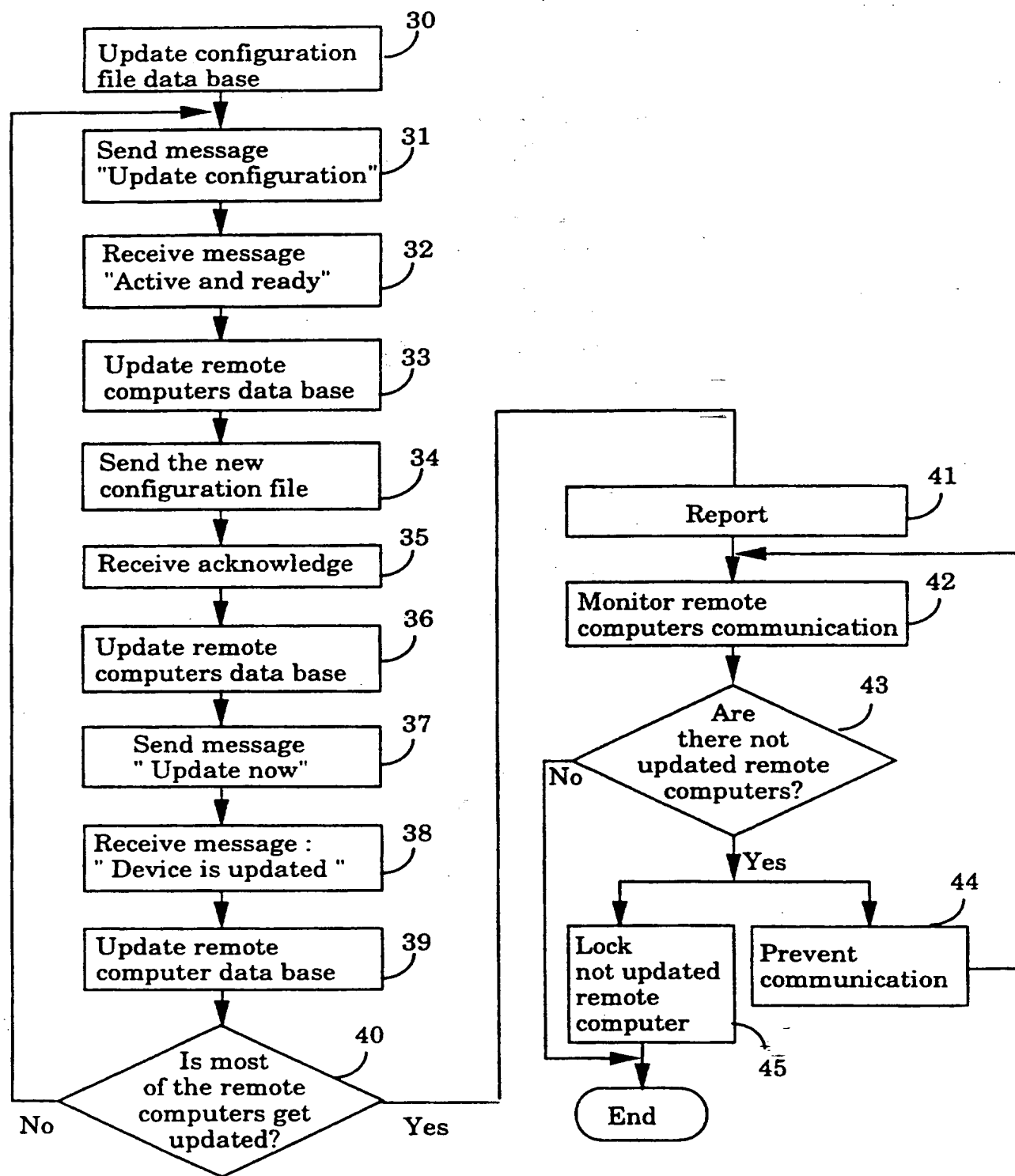


FIG. 2

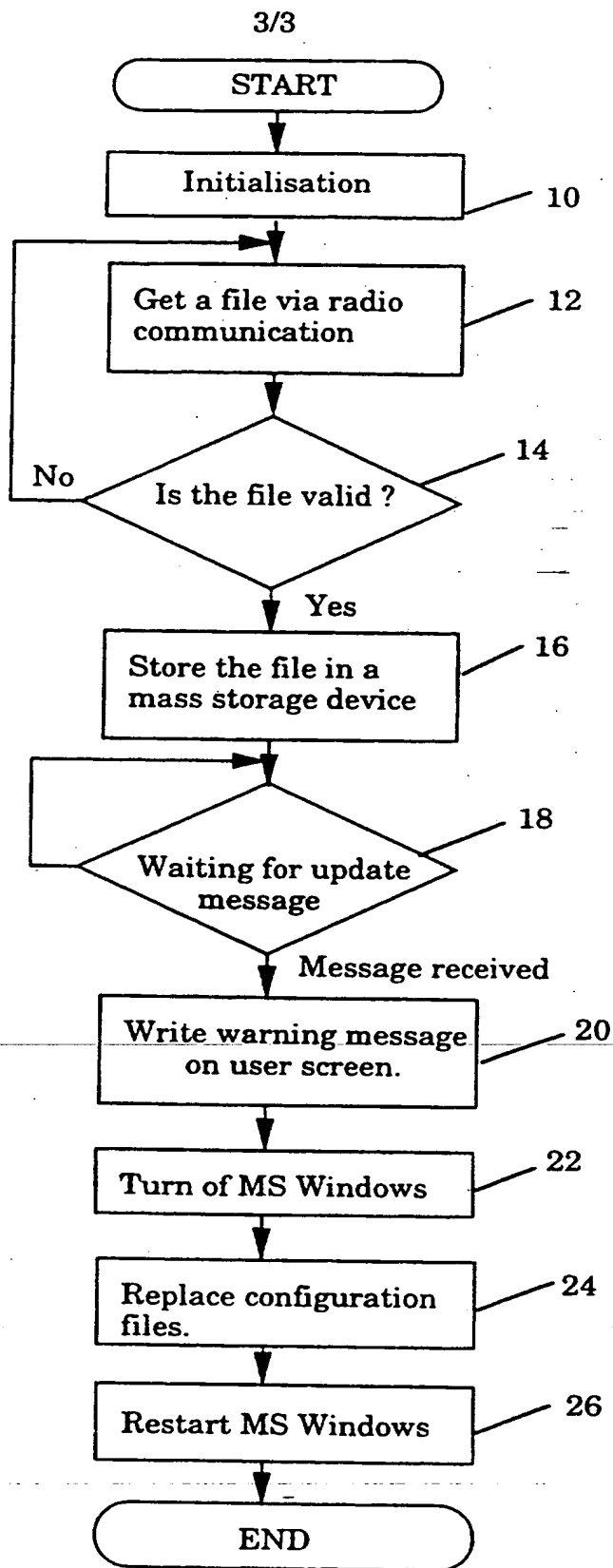


FIG. 3

METHOD FOR UPDATING OPERATING SYSTEM

Field of the Invention

5 This invention relates to computer operating systems. The invention is applicable but not limited to, updating MS Windows operating system via radio modem.

Background of the Invention

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MS Windows is an operating system that runs on IBM personal computers and compatibles. Installation of a new application program or installation of a data base changes the MS Windows configuration files. In computer networks having remote computers with MS Windows operating system communicating via radio modems, the remote computers need to have the same operating system configuration files. When the network configuration is changed, the MS Windows configuration files have to be changed on the remote computers as well. Thus, the system manager has to install MS Windows operating configuration files in each remote computer separately.

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There is a need for a method for simultaneously or more efficiently updating MS Windows configuration files in all of the remote computers.

Summary of the Invention

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A method for updating by a host computer the operating system of at least one remote computer having a special program module, the method having the steps of sending an over the air message from the host computer to the special program module of the at least one remote computer and updating the at least one remote computer according to the over the air message.

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A radio communications system for remotely updating operating system configurations, the system comprising a host computer having a data base for storing the configuration files for updating at least one of the remote computer, a data base for storing at least one of the remote computer status information, a radio modem and at least one remote computer having a special program module and a radio modem arranged for communicating via radio frequency with the host computer in order to

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receive messages for updating the operating system configurations of the at least one remote computer.

Brief Description of the Drawings

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FIG. 1 is a block diagram of radio communications system for remotely updating operating system configurations according to a preferred embodiment of the invention.

10 FIG. 2 is a flow chart showing the special program module operation at the host computer according to a preferred embodiment of the invention.

FIG. 3 is a flow chart showing the special program module operation at the remote computer according to a preferred embodiment of the invention.

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Detailed Description of the Drawings

Referring first to FIG. 1, a block diagram of a radio communications system for remotely updating operating system configurations according to a preferred embodiment of the invention is shown. The system includes a host computer 108 having a host special program module (HSPM) 111, a remote computers data base 109, a configuration files data base 110, a operating system, e.g. MS Windows 113, and a communication driver 112. The host computer 108, a radio modem 107 and a base station radio transceiver 106 are operably coupled. Also shown is at least one remote computer 102 including a remote special program module (RSPM) 103, an operating system, e.g. MS Windows 105, and a communication driver 104. The remote computer 102, a radio modem 101 and a radio transceiver 100 are operably coupled.

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30 In operation the remote computer 102, the radio modem 101 and the radio transceiver 100 are arranged for communicating via radio frequency with the host computer 108 in order to receive messages for updating the MS Windows 105 operating system configurations of the remote computer 102. The MS Windows configuration file updating process starts when a new configuration file is placed in the configuration files data base 110. The HSPM 111 saves the MS Windows old configuration file in the configuration files data base 110 and sends a update message using the communication driver 112, the radio modem 107 and the base station radio

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transceiver 106, to the remote computer 102. The update message is received at the remote radio transceiver 100. The remote radio transceiver 100 transfers the update message to the radio modem 101 and to the communication driver 104 in the remote computer 102. The
5 communication driver 104 transfers the updating message to the MS Windows operating system and to the RSPM 103. The RSPM 103 sends over the air an acknowledge message to the host computer HSPM 111 and the HSPM 111 updates the remote computers data base 109.

Referring now to FIG. 2, a flow chart illustrating the host special
10 program module operation according to a preferred embodiment of the invention is shown. The method of sending an over the air message from the HSPM 111 of the host computer 108 to the RSPM 103 of the remote computer 102 includes the steps of receiving a new operating system, e.g.
15 MS Windows configuration file and updating the configuration files data base 110 as in step 30. The HSPM 111 sends an over the air message to update the configuration file to remote computer 102 as in step 31. The HSPM 111 receives active and ready message from of the remote computer 102 as in step 32 and updates the remote computers data base 109 with the remote computer 102 ready and active status as in step 33. The HSPM 111
20 sends over the air the configuration file to the ready and active remote computers as in step 34. The HSPM 111 receives an acknowledge message from remote computer 102 as in step 35 and updates the remote computers data base 109 with the status of the remote computer 102 that has the new configuration file as in step 36. The HSPM 111 sends over the air a
25 message to update now the configuration file to at least one of the remote computer 102 as in step 37 and receives from the remote computer 102 a successful updating message as in step 38. The HSPM 111 updates the remote computers data base with the status of the remote computer 102. After these steps the remote computers data base 109 has updated
30 information about each of the remote computers. The remote computers data base 109 has the information of the remote computer configuration file version, the remote computers to be updated, remote computers that fail to response and remote computers that failed to update the MS Windows configuration file. The HSPM 111 looks at remote computers data base 109
35 to see if most of the remote computers were updated as in step 40 and inform the system operator about which remote computers that were not updated as in step 41. Thus, the HSPM 111 may repeat the updating process as described above. The system operator monitors the remote

computer 102 radio modem 107 communication as in step 42 and tries to discover which of the remote computers that have not updated MS Windows configuration file as in step 43 and the system operator has to decide whether to prevent the communication from the remote computer 102 that has not updated MS Windows configuration file till having updated by the host computer as in step 44 or to lock the remote computer 102 that have not updated MS Windows configuration file as in step 45.

Referring now to FIG. 3, a flow chart is shown illustrating a method for updating over the air by a host computer having a special program module and data base, the operating system of at least one remote computer having a special program module (SPM) according to a preferred embodiment of the invention. The remote computer 102 initialisation process as step 10 starts when the remote computer 102 starts to run and includes the steps of initialisation of a wireless communication driver 104, initialisation of the RSPM 103 and initialisation of MS Windows 105. The host computer 108 sends by radio modem 107, an over the air MS Windows updated configuration file to the RSPM 103 of the at least one remote computer 102. The RSPM 103 of the remote computer 102 receives the MS Windows updated configuration file as in step 12 and checks the update configuration file validity as in step 14. If the MS Windows configuration file is not valid the RSPM 103 will wait to receive a valid MS Windows configuration file. If the MS Windows configuration file is valid the RSPM 103 will store the file in a mass storage device as in step 16 and will wait for a update message from the host computer 108 as in step 18.

When the RSPM 103 receives the update message from the host computer 108 at the remote computer 102, the RSPM 103 will write a warning message on the user screen as in step 20. Then the RSPM 103 will turn off the MS Windows 105 operating system as in step 22 and replace the MS Windows configuration file with the update configuration file as in step 24 and restart MS Windows 105 operating system.

Advantageously, the method described above allows updating MS Windows configuration file to at least one remote computer 102 by sending an over the air message from the host computer 108 to the special program module 103 of the remote computer 102. The host computer 108 can update the entire fleet of remote computers with no limitation on the remote computers number in the fleet at the same time via radio communication and have a remote access to every remote computer in the fleet to make the

MS Windows configuration file updating. The method described above saves a lot of time of updating the configuration file of a fleet of computers.

Claims

1. A method for updating by a host computer having a host special program module and a data base, an operating system of at least one remote computer having a remote special program module, the method having the steps of:

10 sending an over the air message from the host special program module to the remote special program module of the at least one remote computer; and
updating the at least one remote computer according to the over the air message.

2. The method of claim 1 wherein the operating system is MS Windows.

3. The method of claim 1 wherein the host computer and the at least one remote computer include radio modems.

4. The method of claim 1 wherein the data base includes:
20 configuration files for updating the at least one remote computer;
and
status information of the at least one remote computer .

5. A radio communications system for remotely updating operating system configurations, the system comprising:
25 a host computer having a host special program module, a data base having a configuration files for updating at least one remote computer, a data base having at least one remote computer status information and a radio modem; and
30 at least one remote computer having a remote special program module and a radio modem arranged for communicating via radio frequency with the host computer in order to receive messages for updating the operating system configurations of the at least one remote computer.

- 35 6. A method for updating an operating system of at least one remote computer and a radio communications system for remotely updating

operating system configurations substantially as shown and described in FIGs. 1, 2 and 3.



The Patent Office

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Application No: GB 9603600.9
Claims searched: All

Examiner: Mr Matthew Gillard
Date of search: 11 April 1996

Patents Act 1977 Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.O): G4A AFL

Int Cl (Ed.6): G06F 9/24, 9/445

Other: On-line: WPI

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
Y	EP 0654936 A2 (MITA INDUSTRIAL). See column 7, lines 11-30.	1 and 5 at least.
Y	EP 0457940 A1 (HEWLETT-PACKARD). See figure 2.	1 and 5 at least.
Y	EP 0284924 A2 (IBM) See column 4, lines 14-56.	1 and 5 at least.
Y	US 5406484 (SIEMENS) See abstract and figure 1.	1 and 5 at least.
Y	US 5247446 (BOSCH) See column 3, line 41.	1 and 5 at least.

X Document indicating lack of novelty or inventive step
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